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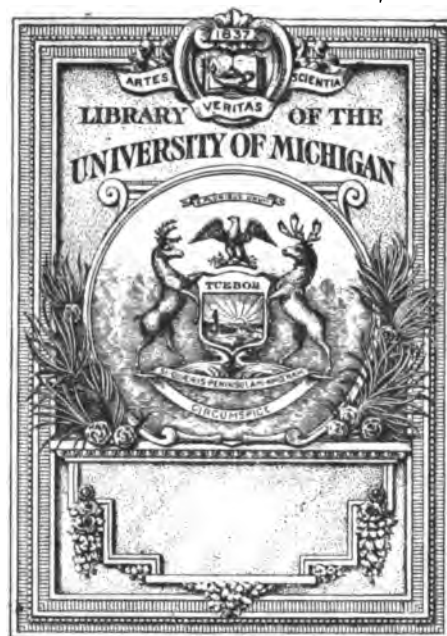
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U.S. Bureau of Census. Rubber Industry



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DEPARTMENT OF COMMERCE

BUREAU OF THE CENSUS

SAM. L. ROGERS, DIRECTOR

CENSUS OF MANUFACTURES: 1914

THE RUBBER INDUSTRY

Prepared under the supervision of W. M. STEUART, Chief Statistician for Manufactures

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EXPLANATION OF TERMS.

Scope of census.—Census statistics of manufactures are compiled primarily for the purpose of showing the absolute and relative magnitude of the different branches of industry covered and their growth or decline. Incidentally, the effort is made to present data throwing light upon character of ownership, size of establishments, and similar subjects. When use is made of the statistics for these purposes it is imperative that due attention should be given to their limitations, particularly in connection with any attempt to derive from them figures purporting to show average wages, cost of production, or profits.

The census did not cover establishments which were idle during the entire year or whose products were valued at less than \$500, or the manufacturing done in educational, eleemosynary, and penal institutions.

Period covered.—The returns relate to the calendar year 1914, or the business year which corresponded most nearly to that calendar year, and cover a year's operations, except for establishments which began or discontinued business during the year.

The establishment.—As a rule, the term "establishment" represents a single plant or factory, but in some cases it represents two or more plants which were operated under a common ownership or for which one set of books of account was kept. If, however, the plants constituting an establishment as thus defined were not all located within the same city or state, separate reports were secured in order that the figures for each plant might be included in the statistics for the city or state in which it was located.

Influence of increased prices.—In comparing figures for cost of materials, value of products, and value added by manufacture in 1914 and 1909 with the corresponding figures for earlier censuses, account should be taken of the general increase in the prices of commodities during recent years. To the extent to which this factor has been influential the figures fail to afford an exact measure of the increase in the volume of business.

Persons engaged in the industry.—The following general classes of persons engaged in the industry distinguished: (1) Proprietors and firm members, (2) salaried officers of corporations, (3) superintendents and managers, (4) clerks (including other subordinate salaried employees), and (5) wage earners. In the reports for the censuses of 1904 and 1899 these five classes were shown according to the three main groups: (1) Proprietors and firm members, (2) salaried officials, clerks, etc., and (3) wage earners. In comparative tables covering the census of 1904 it is of course necessary to group the figures according to the classification that was employed at the earlier censuses.

The number of persons engaged in the industry, distributed by sex, and, in the case of wage earners, also by age (whether under 16 or 16 and over), was reported for a single representative day. The 15th of December was selected as representing for most establishments normal conditions of employment, but where this date was not a representative day an earlier date was chosen.

In the case of employees other than wage earners the number thus reported for the representative date has been treated as equivalent to the average for the year, since the number of employees of this class does not ordinarily vary much from month to month. In the case of wage earners the average has been obtained in the manner explained in the next paragraph.

In addition to the more detailed report by sex and age of the number of wage earners on the representative date, a report was obtained of the number employed on the 15th of each month, without distinction of sex or age. From these figures the average number of wage earners for the year has been calculated by dividing the sum of the numbers reported for the several months by 12. The average thus obtained approximates the number of wage earners that would be required to perform the work done if all were constantly employed during the entire year. Accordingly, the importance of the industry as an employer of labor is believed to be more accurately measured by this average than by the number employed at any one time or on a given day.

In order to determine as nearly as possible the sex and age distribution of the average number of wage earners for the industry as a whole, the per cent distribution by sex and age of the wage earners reported for December 15, or the nearest representative day, has been calculated from the actual number reported for that date, the percentages thus obtained have been applied to the average number of wage earners for the year in the industry to determine the average number of men, women, and children employed.

Salaries and wages.—Under these heads are given the total payments during the year for salaries and wages, respectively. The Census Bureau has not undertaken to calculate the average annual earnings of either salaried employees or wage earners. Such averages would possess little real value, because they would be based on the earnings of employees of both sexes, of all ages, and of widely varying degrees of skill. Furthermore, so far as wage earners are concerned, it would be impossible to calculate accurately even so

simple an average as this, since the number of wage earners fluctuates from month to month. The Census Bureau's figures for wage earners, as already explained, are averages based on the number employed on the 15th of each month and represent the approximate number who would be required to perform the work if all were continuously employed during the year, whereas the actual number to whom the total wages were paid would be larger.

Prevailing hours of labor.—No attempt was made to ascertain the number of wage earners working a given number of hours per week. The inquiry called merely for the prevailing practice followed in each establishment. Occasional variations in hours in an establishment from one part of the year to another were disregarded, and no attention was paid to the fact that a limited number of wage earners might have hours differing from those of the majority. All the wage earners of each establishment are therefore counted in the class within which the establishment itself falls. In most establishments, however, all or practically all the wage earners work the same number of hours, so that the figures give a substantially correct representation of the hours of labor.

Capital.—The instructions on the schedule for securing data relating to capital were as follows:

The answer should show the total amount of capital, both owned and borrowed, on the last day of the business year reported. All the items of fixed and live capital may be taken at the amounts carried on the books. If land or buildings are rented that fact should be stated and no value given. If a part of the land or buildings is owned, the remainder being rented, that fact should be so stated and only the value of the owned property given. Do not include securities and loans representing investments in other enterprises.

These instructions were identical with those employed at the census of 1909. The data compiled in respect to capital, however, at both censuses, as well as at all preceding censuses of manufactures, have been so defective as to be of little value except as indicating very general conditions. In fact, it has been repeatedly recommended by the census authorities that this inquiry be omitted from the schedule. While there are some establishments whose accounting systems are such that an accurate return for capital could be made, this is not true of the great majority, and the figures therefore do not show the actual amount of capital invested.

Materials.—The statistics as to cost of materials relate to the materials used during the year, which may be more or less than the materials purchased during the year. The term "materials" covers fuel, rent of power and heat, mill supplies, and containers, as well as materials which form a constituent part of the product.

Rent and taxes.—The taxes include internal revenue, corporation income tax, and state, county, and local taxes. In some instances the amount of the corporation tax for 1914 had not been ascertained when the report was prepared and the amount paid for 1913 was given.

Value of products.—The amounts given under this heading represent the selling value or price at the factory of all products manufactured during the year, which may differ from the value of the products sold.

Value added by manufacture.—The value of products is not a satisfactory measure of either the absolute or the relative importance of a given industry, because only a part of this value is actually created by the manufacturing processes carried on in the industry itself. Another part, and often by far the larger one, represents the value of the materials used. For many purposes, therefore, the best measure of the importance of an industry is the value created by the manufacturing operations carried on within the industry. This value is calculated by deducting the cost of the materials used from the value of the products. The figure thus obtained is termed in the census reports "value added by manufacture."

Cost of manufacture and profits.—The census data do not show the entire cost of manufacture, and consequently can not be used for the calculation of profits. No account has been taken of interest or depreciation, rent of offices and buildings other than factory or works, insurance, ordinary repairs, advertising, and other sundry expenses.

Primary horsepower.—This item represents the total primary power generated by the manufacturing establishments plus the amount of power, principally electric, rented from other concerns. It does not cover the power of electric motors taking their current from dynamos driven by primary power machines operated by the same establishment, because the inclusion of such power would obviously result in duplication. The figures for primary horsepower represent the rated capacity of the engines, motors, etc., and not the amount of power in actual daily use, since in most cases an engine or motor is not required to deliver continuously its full rated horsepower.

Fuel.—Statistics of the quantity of fuel used are shown only for anthracite and bituminous coal, coke, oil, and gas. They relate to the quantity used during the year, which may be more or less than the quantity purchased. As only the principal varieties of fuel are shown, no comparison can be made with the total cost of all fuel.

THE RUBBER INDUSTRY.

SUMMARY AND ANALYSIS.

Scope of the report.—This report presents statistics for the establishments engaged primarily in the manufactures of rubber or products in which rubber is the principal material. The reports received were classified into three groups: (1) Establishments whose principal products were rubber belting and hose; (2) establishments making rubber boots and shoes; and (3) establishments engaged primarily in the manufacture of all other kinds of rubber products. The first group has been divided into subgroups, those establishments whose chief product was belting and those making hose as a primary product. The third group consists of establishments manufacturing rubber tires of all kinds, rubber packing, rubber clothing, druggists' and stationers' sundries, and other articles made from rubber. Prior to the census of 1909 elastic woven goods was included in the statistics for rubber goods, but in 1909 and 1914 the manufacture of this class of goods was included in the industry "suspenders, garters, and elastic woven goods." Table 1 presents, for 1914, the more important statistics for the rubber industry as a whole and for each branch of the industry.

of rubber belting and hose; 7 of these made belting chiefly and 11 made hose as a primary product. Rubber boots and shoes were the chief product of 23 establishments, and other rubber goods were made in 301 establishments. The most important branch of the rubber industry is that designated as "rubber goods, not elsewhere specified," 74.3 per cent of the total value of products being reported for this branch.

Comparison with earlier censuses.—Table 2 summarizes the statistics of establishments engaged in the rubber industry as a whole, together with separate figures for the three branches of the industry, from 1879 to 1914, and gives percentages of increase.

The value of the products of the industry increased from \$25,309,648 in 1879 to \$300,993,796 in 1914, or more than elevenfold; the increase for the decade 1904 to 1914 was 103.4 per cent, while for the later half of the decade the increase was 52.5 per cent. Each branch of the industry shows a substantial increase between 1909 and 1914, rubber goods, not elsewhere specified, showing the largest percentages of increase. The value of the product for the belting and hose industry increased 22.5 per cent between 1909 and 1914, rubber boots and shoes, 8.2 per cent, and rubber goods, 74.1 per cent.

The decrease in the number of proprietors and firm members is due to the decrease in the number of small establishments operated by individuals or firms, and also to the fact that some establishments of this class were incorporated during the period between the censuses. In such cases the class reported as proprietors or firm members at one census might be returned as salaried employees at a subsequent enumeration.

In addition to the \$300,993,796 reported as the total value of products for the rubber industry in 1914, rubber goods to the amount of \$752,503 were manufactured as subsidiary products by 19 establishments engaged primarily in other industries.

A distribution, by states, of the value of products for the industry as a whole can not be shown without the possibility of disclosing the operations of individual establishments in some states. Table 15, however, gives for 1914 the value of products for each branch of the industry, together with separate totals for such states as can be shown.

Recd. 18-11-14

Table 1	Total for the industry.	ESTABLISHMENTS ENGAGED PRIMARILY IN THE MANUFACTURE OF—			
		Belting and hose, rubber.		Boots and shoes, rubber.	Rubber goods, not elsewhere specified.
		Belting.	Hose.		
Number of establishments.....	342	7	11	23	301
Persons engaged in the industry.....	88,821	2,997	3,208	20,359	62,257
Proprietors and firm members.....	87	.....	.....	2	85
Salaried employees.....	14,712	555	535	1,670	11,952
Wage earners (average number).....	74,022	2,442	2,673	18,687	50,220
Primary horsepower.....	199,543	10,506	12,489	24,621	151,927
Capital.....	\$267,671,422	\$11,249,598	\$11,187,324	\$46,051,464	\$199,183,036
Salaries and wages.....	60,445,980	2,424,642	2,170,973	11,944,733	43,905,632
Salaries.....	16,278,578	973,080	720,342	1,958,279	12,626,877
Wages.....	44,167,402	1,451,562	1,450,631	9,986,454	31,278,755
Paid for contract work.....	408,851	.....	1,200	39,140	368,511
Rent and taxes (including internal revenue).....	2,226,322	81,857	83,101	345,678	1,715,686
Cost of materials.....	163,034,713	5,926,568	7,040,436	23,956,036	126,111,673
Value of products.....	300,993,796	11,580,405	11,980,484	53,822,123	223,610,784
Value added by manufacture (value of products less cost of materials).....	137,959,083	5,653,837	4,940,048	29,866,087	97,499,111

Of the 342 establishments reported by the rubber industry in 1914, 18 were engaged in the manufacture

MANUFACTURES.

Table 2

	NUMBER OR AMOUNT.						PER CENT OF INCREASE.				
	1914	1909	1904	1899	1889	1879	1909-1914	1904-1909	1899-1904	1889-1899	1879-1889
RUBBER GOODS—ALL BRANCHES.¹											
Number of establishments.....	342	267	265	301	167	104	28.1	0.8	-12.0	80.2	60.6
Persons engaged in the industry.....	88,821	56,059	47,676	(²)	(²)	(²)	58.4	17.6	.....	.....	.....
Proprietors and firm members.....	87	103	105	(²)	(²)	(²)	-15.5	-1.9	.....	.....	.....
Salaried employees.....	14,712	6,602	3,698	2,505	859	(²)	119.8	81.0	47.6	191.6	.....
Wage earners (average number).....	74,022	49,264	43,873	36,566	20,152	11,789	50.3	12.3	20.0	81.5	70.9
Primary horsepower.....	199,543	122,436	86,808	71,169	27,125	(²)	63.0	41.0	22.0	162.4	.....
Capital.....	\$267,671,422	\$162,144,564	\$98,979,636	\$78,463,771	\$36,764,825	\$8,974,187	65.1	63.8	26.1	113.4	309.7
Salaries and wages.....	60,445,980	32,977,676	24,623,078	18,575,728	9,526,909	4,051,431	83.3	33.9	32.6	95.0	135.1
Salaries.....	16,278,578	7,840,700	4,538,912	3,149,155	(²)	(²)	107.6	72.7	44.1	.....	.....
Wages.....	44,167,402	25,136,976	20,084,166	15,426,573	(²)	(²)	75.7	25.2	30.2	.....	.....
Paid for contract work.....	408,851	25,099	76,188	62,861	(²)	(²)	1,529.0	-67.1	21.2	.....	.....
Rent and taxes (including internal revenue).....	2,226,322	851,213	\$643,127	\$653,321	(²)	(²)	161.5	.....	.....	.....	.....
Cost of materials.....	163,034,713	122,745,102	80,002,476	60,240,559	26,243,853	16,527,220	32.8	53.4	32.8	129.5	58.8
Value of products.....	300,963,796	197,394,638	148,015,391	99,880,693	42,853,817	25,309,648	52.5	33.4	48.2	133.1	69.3
Value added by manufacture (value of products less cost of materials).....	137,959,083	74,649,536	68,012,915	39,640,134	16,609,964	8,782,428	84.8	9.8	71.6	138.7	89.1
BELTING AND HOSE, RUBBER.											
Number of establishments.....	18	18	19	18	17	2	.....	.....	.....	.....	.....
Persons engaged in the industry.....	6,206	5,876	4,210	1,971	(²)	(²)	5.6	39.6	113.6	.....	.....
Proprietors and firm members.....	1	1	1	3	(²)	(²)	.....	.....	.....	.....	.....
Salaried employees.....	1,090	744	512	197	110	(²)	46.5	46.3	159.9	79.1	.....
Wage earners (average number).....	5,115	5,131	3,698	1,771	1,835	364	-0.3	38.8	108.8	-3.5	404.1
Primary horsepower.....	22,965	17,471	12,343	5,317	4,942	(²)	31.6	41.5	132.1	7.6	.....
Capital.....	\$22,436,922	\$19,731,968	\$13,240,273	\$5,493,885	\$5,270,068	\$265,000	13.7	49.0	141.0	4.2	1,898.7
Salaries and wages.....	4,566,615	3,462,720	2,612,640	1,254,510	1,043,768	131,721	31.6	33.7	108.3	20.2	692.4
Salaries.....	1,693,422	1,019,844	807,648	336,319	(²)	(²)	66.0	26.3	140.1	.....	.....
Wages.....	2,902,193	2,472,876	1,804,992	918,191	(²)	(²)	17.4	37.0	96.6	.....	.....
Paid for contract work.....	1,200	.....	1,515	6,096	(²)	(²)	.....	.....	-75.1	.....	.....
Rent and taxes (including internal revenue).....	164,958	78,941	\$63,448	\$52,620	(²)	(²)	109.0	.....	.....	.....	.....
Cost of materials.....	12,967,004	10,976,105	9,089,786	4,075,702	3,479,538	863,000	18.1	20.8	123.0	17.1	303.2
Value of products.....	23,580,889	19,238,324	14,964,186	6,169,044	5,512,840	1,066,000	22.5	28.6	142.4	11.9	408.1
Value added by manufacture (value of products less cost of materials).....	10,583,885	8,262,219	5,864,400	2,093,342	2,033,302	222,000	28.2	40.9	180.1	3.0	815.9
BOOTS AND SHOES, RUBBER.											
Number of establishments.....	23	22	22	22	11	9	.....	.....	.....	.....	.....
Persons engaged in the industry.....	20,359	18,899	19,815	14,877	(²)	(²)	7.7	-4.6	33.2	.....	.....
Proprietors and firm members.....	2	2	2	3	(²)	(²)	.....	.....	.....	.....	.....
Salaried employees.....	1,670	1,287	822	483	130	(²)	29.8	56.6	70.2	271.5	.....
Wage earners (average number).....	18,687	17,612	18,991	14,391	9,134	4,662	6.1	-7.3	32.0	67.6	96.9
Primary horsepower.....	24,621	25,903	26,084	26,017	9,543	(²)	-4.9	-0.7	4.3	162.2	.....
Capital.....	\$46,061,464	\$43,905,368	\$39,441,826	\$33,667,533	\$17,799,970	\$2,426,000	4.9	11.3	17.2	89.2	633.6
Salaries and wages.....	11,944,733	9,958,965	9,740,807	7,023,818	3,966,875	1,469,038	19.9	2.2	38.7	77.1	170.1
Salaries.....	1,958,279	1,414,743	874,001	597,239	(²)	(²)	38.4	61.9	46.3	.....	.....
Wages.....	9,986,454	8,544,252	8,866,806	6,426,579	(²)	(²)	16.9	-3.6	38.0	.....	.....
Paid for contract work.....	89,140	.....	5,132	(²)	(²)	(²)	.....	.....	.....	.....	.....
Rent and taxes (including internal revenue).....	345,678	266,368	\$184,590	\$197,692	(²)	(²)	29.8	.....	.....	.....	.....
Cost of materials.....	23,956,036	29,577,176	32,000,464	22,682,543	11,650,787	6,023,053	-19.0	-7.6	41.1	94.7	93.4
Value of products.....	63,822,123	49,720,567	70,066,266	41,069,819	18,632,060	9,705,724	8.2	-29.0	70.5	120.5	92.0
Value added by manufacture (value of products less cost of materials).....	20,866,087	20,143,391	38,064,832	18,407,276	6,981,273	3,682,671	48.3	-47.1	106.8	163.7	89.6
RUBBER GOODS, NOT ELSEWHERE SPECIFIED.³											
Number of establishments.....	301	227	224	261	139	93	32.6	1.3	-14.2	87.8	.....
Persons engaged in the industry.....	62,257	31,284	23,651	(²)	(²)	(²)	99.0	32.3	.....	.....	.....
Proprietors and firm members.....	85	102	103	(²)	(²)	(²)	-16.7	-1.0	.....	.....	.....
Salaried employees.....	11,952	4,661	2,364	1,825	619	(²)	156.4	97.2	29.5	194.8	.....
Wage earners (average number).....	50,220	26,521	21,184	20,404	9,183	6,763	89.4	25.2	3.8	122.2	35.8
Primary horsepower.....	151,927	79,062	48,381	40,835	12,640	(²)	92.2	63.4	18.5	223.1	.....
Capital.....	\$199,183,036	\$98,807,228	\$46,297,537	\$39,302,383	\$13,703,787	\$6,284,187	102.2	112.8	17.8	186.8	118.1
Salaries and wages.....	43,906,632	19,625,961	12,269,631	10,297,400	4,616,266	2,450,672	124.9	59.1	19.2	128.0	84.3
Salaries.....	12,526,877	5,406,113	2,857,263	2,215,597	(²)	(²)	133.6	89.2	29.0	.....	.....
Wages.....	31,379,755	14,119,848	9,412,368	8,081,803	(²)	(²)	121.6	50.0	16.5	.....	.....
Paid for contract work.....	368,511	25,099	69,541	56,765	(²)	(²)	1,368.2	-63.9	22.5	.....	.....
Rent and taxes (including internal revenue).....	1,715,666	505,904	\$415,059	\$408,009	(²)	(²)	239.1	.....	.....	.....	.....
Cost of materials.....	126,111,673	82,191,821	38,912,226	33,482,314	11,113,528	9,641,167	53.4	111.2	16.2	201.3	15.3
Value of products.....	223,610,784	128,435,747	62,995,909	52,621,830	18,706,917	14,518,924	74.1	103.9	19.7	181.3	28.9
Value added by manufacture (value of products less cost of materials).....	97,499,111	46,243,926	24,083,683	19,139,516	7,595,389	4,877,757	110.8	92.0	25.8	152.0	55.7

¹ A minus sign (-) denotes decrease; percentages are omitted where base is less than 100.² Figures for 1904, 1899, 1889, and 1879 include data for establishments engaged in the manufacture of elastic woven goods, and are not strictly comparable with figures for 1909 and 1914.³ Figures not available.⁴ Exclusive of internal revenue.

Persons engaged in the industry.—Table 3 shows, for 1914 and 1909, the number of persons engaged in the industry as a whole and in each of the three branches separately, distributed by sex, the average number of wage earners being distributed also by age. The sex and age classification of the average number of wage earners in this and other tables is an estimate obtained by the method described in the "Explanation of terms."

Table 4 gives, for the several classes of persons engaged in the industry and in each branch, the percent-

ages of increase from 1909 to 1914 and the per cent distribution at the two censuses.

Of the 88,821 persons engaged in the industry in 1914, 79.6 per cent were males and 20.4 per cent were females, the proportion of males being larger by 3.4 per cent than in 1909. The wage earners formed 83.3 per cent of all persons engaged in the industry and the average number increased by 50.3 per cent between 1909 and 1914. For the industry as a whole, increases in the number employed are shown for all classes, except proprietors and firm members and wage

earners under 16 years of age. For the separate industries, a decrease is shown in the number of wage earners employed in the belting and hose industry, while each of the other branches reported increases.

"Rubber goods, not elsewhere specified," shows an increase of 89.4 per cent in the number of wage earners in 1914, as compared with 1909.

Table 3		Cen- sus year.		PERSONS ENGAGED IN THE INDUSTRY.						Cen- sus year.		PERSONS ENGAGED IN THE INDUSTRY.							
				Total.	Male.	Fe- male.	Per cent of total.		Total.			Male.	Fe- male.	Per cent of total.					
							Male.	Fe- male.						Male.	Fe- male.				
INDUSTRY AND CLASS.										INDUSTRY AND CLASS.									
RUBBER GOODS—ALL BRANCHES				1914	88,821	70,716	18,105	79.6	20.4	BOOTS AND SHOES, RUBBER.....				1914	20,359	12,407	7,952	60.9	39.1
				1909	56,059	42,702	13,357	76.2	23.8					1909	18,899	11,680	7,219	61.8	38.2
Proprietors and officials.....				1914	1,599	1,570	29	98.2	1.8	Proprietors and officials.....				1914	160	155	5	96.9	3.1
				1909	1,118	1,094	24	97.9	2.1					1909	194	191	3	98.5	1.5
Proprietors and firm members..				1914	87	82	5	94.3	5.7	Proprietors and firm members..				1914	2	2	.....	100.0	.....
				1909	103	93	10	90.3	9.7					1909	.....	.....	.....	100.0	.....
Salaried officers of corporations..				1914	514	503	11	97.9	2.1	Salaried officers of corporations..				1914	44	44	.....	100.0	.....
				1909	348	344	4	98.9	1.1					1909	44	44	.....	100.0	.....
Superintendents and managers..				1914	988	985	13	98.7	1.3	Superintendents and managers..				1914	111	109	5	96.6	4.4
				1909	687	657	10	98.5	1.6					1909	150	147	3	98.0	2.0
Clerks and other subordinate sala- ried employees.				1914	13,200	9,900	3,300	75.0	25.0	Clerks and other subordinate sala- ried employees.				1914	1,512	1,056	456	69.8	30.2
				1909	5,677	4,256	1,421	75.0	25.0					1909	1,093	813	280	74.4	25.6
Wage earners (average number).....				1914	74,022	58,246	14,776	80.0	20.0	Wage earners (average number).....				1914	18,687	11,196	7,491	59.9	40.1
				1909	49,264	37,352	11,912	75.8	24.2					1909	17,612	10,676	6,936	60.6	39.4
16 years of age and over.....				1914	73,376	58,907	14,469	80.3	19.7	16 years of age and over.....				1914	18,440	11,094	7,346	60.2	39.8
				1909	48,393	36,908	11,485	76.3	23.7					1909	17,162	10,451	6,711	60.9	39.1
Under 16 years of age.....				1914	646	339	307	52.5	47.5	Under 16 years of age.....				1914	247	102	145	41.3	58.7
				1909	871	449	422	51.5	48.5					1909	450	225	225	50.0	50.0
BELTING AND HOSE, RUBBER.....				1914	6,205	5,264	921	85.2	14.8	RUBBER GOODS, NOT ELSE- WHERE SPECIFIED.				1914	62,257	53,035	9,222	85.2	14.8
				1909	5,876	5,294	582	90.1	9.9					1909	31,264	26,728	4,536	82.2	17.8
Proprietors and officials.....				1914	116	116	.....	100.0	.....	Proprietors and officials.....				1914	1,323	1,299	24	98.2	1.8
				1909	94	94	.....	100.0	.....					1909	830	809	21	97.5	2.5
Proprietors and firm members..				1914	.....	.....	.....	.....	.....	Proprietors and firm members..				1914	85	80	5	94.1	5.9
				1909	1	1	.....	100.0	.....					1909	102	92	10	90.2	9.8
Salaried officers of corporations..				1914	46	46	.....	100.0	.....	Salaried officers of corporations..				1914	424	413	11	97.4	2.6
				1909	32	32	.....	100.0	.....					1909	272	268	4	98.5	1.5
Superintendents and managers..				1914	70	70	.....	100.0	.....	Superintendents and managers..				1914	814	806	8	99.0	1.0
				1909	61	61	.....	100.0	.....					1909	456	449	7	98.5	1.5
Clerks and other subordinate sala- ried employees.				1914	974	756	218	77.6	22.4	Clerks and other subordinate sala- ried employees.				1914	10,714	8,088	2,626	75.5	24.5
				1909	651	516	135	79.3	20.7					1909	3,933	2,927	1,006	74.4	25.6
Wage earners (average number).....				1914	5,115	4,412	703	86.3	13.7	Wage earners (average number).....				1914	50,220	43,688	6,532	86.9	13.1
				1909	5,131	4,684	447	91.3	8.7					1909	26,521	21,992	4,529	82.9	17.1
16 years of age and over.....				1914	5,099	4,401	698	86.3	13.7	16 years of age and over.....				1914	49,837	43,412	6,425	87.1	12.9
				1909	5,094	4,664	430	91.6	8.4					1909	26,137	21,788	4,349	83.4	16.6
Under 16 years of age.....				1914	16	11	5	68.8	31.2	Under 16 years of age.....				1914	383	226	157	59.0	41.0
				1909	37	20	17	54.1	45.9					1909	384	204	180	53.1	46.9

Table 4

INDUSTRY AND CLASS.	PERSONS ENGAGED IN THE INDUSTRY.								
	Per cent of increase, ¹ 1909-1914.			Per cent distribution.					
	Total.	Male.	Female.	Total.		Male.		Female.	
				1914	1909	1914	1909	1914	1909
RUBBER GOODS—ALL BRANCHES.....	58.4	65.6	35.5	100.0	100.0	100.0	100.0	100.0	100.0
Proprietors and officials.....	43.0	43.5	.....	1.8	2.0	2.2	2.6	0.2	0.2
Proprietors and firm members.....	-15.5	.....	.....	0.1	0.2	0.1	0.2	.....	0.1
Salaried officers of corporations.....	47.7	46.2	.....	0.6	0.6	0.7	0.8	0.1	.....
Superintendents and managers.....	49.6	49.9	.....	1.1	1.2	1.4	1.5	0.1	0.1
Clerks and other subordinate salaried employees.....	132.5	132.6	132.2	14.9	10.1	14.0	10.0	18.2	10.6
Wage earners (average number).....	50.3	58.6	24.0	83.3	87.9	83.8	87.5	81.6	89.2
16 years of age and over.....	51.6	59.6	25.9	82.6	86.3	83.3	86.4	79.9	86.0
Under 16 years of age.....	-25.8	-24.5	-27.3	0.7	1.6	0.5	1.1	1.7	3.2
BELTING AND HOSE, RUBBER.....	5.6	-0.2	58.2	100.0	100.0	100.0	100.0	100.0	100.0
Proprietors and officials.....	.....	.....	.....	1.9	1.6	2.2	1.8	.....	.....
Proprietors and firm members.....	.....	.....	.....	.....	(²)	.....	(²)	.....	.....
Salaried officers of corporations.....	.....	.....	.....	0.7	0.5	0.9	0.6	.....	.....
Superintendents and managers.....	.....	.....	.....	1.1	1.0	1.3	1.2	.....	.....
Clerks and other subordinate salaried employees.....	49.6	46.5	61.5	15.7	11.1	14.3	9.7	23.7	23.2
Wage earners (average number).....	-0.3	-5.8	57.3	82.4	87.3	83.5	88.5	76.3	76.8
16 years of age and over.....	0.1	-5.6	62.3	82.2	86.7	83.3	88.1	75.8	72.9
Under 16 years of age.....	.....	.....	.....	0.3	0.6	0.2	0.4	0.5	2.9

¹A minus sign (-) denotes decrease; percentages are omitted where base is less than 100.

²Less than one-tenth of 1 per cent.

Table 4—Continued.

INDUSTRY AND CLASS.	PERSONS ENGAGED IN THE INDUSTRY.								
	Per cent of increase, ¹ 1909-1914.			Per cent distribution.					
	Total.	Male.	Female.	Total.		Male.		Female.	
				1914	1909	1914	1909	1914	1909
BOOTS AND SHOES, RUBBER	7.7	6.2	10.2	100.0	100.0	100.0	100.0	100.0	100.0
Proprietors and officials.....	-17.5	-18.8	.....	0.8	1.0	1.2	1.6	0.1	(²)
Proprietors and firm members.....	.....	.....	.....	(²)	.....	(²)	.....	.....	.....
Salaried officers of corporations.....	.....	.....	.....	0.2	0.2	0.4	0.4	.....	.....
Superintendents and managers.....	-24.0	-25.9	.....	0.6	0.8	0.9	1.3	0.1	(²)
Clerks and other subordinate salaried employees.....	38.3	29.9	62.9	7.4	5.8	8.5	7.0	5.7	3.9
Wage earners (average number).....	6.1	4.9	8.0	91.8	93.2	90.2	91.4	94.2	96.1
16 years of age and over.....	7.4	6.2	9.5	90.6	90.8	89.4	89.5	92.4	93.0
Under 16 years of age.....	-45.1	-54.7	-35.6	1.2	2.4	0.8	1.9	1.8	3.1
RUBBER GOODS, NOT ELSEWHERE SPECIFIED	99.0	106.1	66.2	100.0	100.0	100.0	100.0	100.0	100.0
Proprietors and officials.....	59.4	60.6	.....	2.1	2.7	2.4	3.1	0.3	0.4
Proprietors and firm members.....	-16.7	.....	.....	0.1	0.3	0.2	0.4	0.1	0.2
Salaried officers of corporations.....	55.9	54.1	.....	0.7	0.9	0.8	1.0	0.1	0.1
Superintendents and managers.....	78.5	79.5	.....	1.3	1.5	1.5	1.7	0.1	0.1
Clerks and other subordinate salaried employees.....	172.4	176.3	161.0	17.2	12.6	15.3	11.4	28.4	18.1
Wage earners (average number).....	89.4	96.4	45.3	80.7	84.8	82.3	85.5	71.3	81.5
16 years of age and over.....	90.7	99.2	47.7	80.1	83.5	81.9	84.7	69.6	78.3
Under 16 years of age.....	-0.3	10.8	-12.8	0.6	1.2	0.4	0.8	1.7	3.2

¹ A minus sign (-) denotes decrease; percentages are omitted where base is less than 100.² Less than one-tenth of 1 per cent.

Wage earners employed, by months.—The following table gives, for the industry, the total number of wage earners employed on the 15th of each month, or the nearest representative day, for 1914 and 1909, and the average number employed during each month for 1904, together with the percentage which the number reported for each month forms of the greatest number reported for any month.

MONTH.	WAGE EARNERS IN THE INDUSTRY.					
	Number. ¹			Per cent of maximum.		
	1914	1909	1904	1914	1909	1904
January	70,590	45,945	44,426	85.9	86.8	96.1
February	74,157	46,289	44,069	90.2	87.5	97.3
March	77,759	47,996	44,643	94.6	90.7	98.6
April	80,967	48,864	42,841	98.5	92.4	94.6
May	82,193	48,606	42,424	100.0	91.9	93.7
June	78,650	48,808	43,488	95.7	92.3	96.0
July	74,148	48,687	42,916	90.2	92.4	94.8
August	68,414	48,646	43,518	83.2	92.0	96.1
September	70,412	50,338	43,638	85.7	95.2	96.4
October	70,441	51,369	44,325	85.7	97.1	97.9
November	69,954	52,540	44,906	85.1	99.3	98.1
December	70,579	52,902	45,291	85.9	100.0	100.0

¹ The figures for 1914 and 1909 represent the number employed on the 15th of each month, or the nearest representative day; those for 1904, the average number employed during the month.

May was the month of maximum employment in 1914, 82,193 being reported, while the minimum number, 68,414, was shown for August. In both 1909 and 1904 the largest number of wage earners was reported for December, and the smallest was reported for

January in 1909 and for May in 1904. The greatest stability of employment is shown for 1904, the minimum number representing 93.7 per cent of the maximum, while the greatest fluctuation in number employed appears for 1914 when the smallest number reported formed 83.2 per cent of the largest number.

Table 6 gives the total average number of wage earners employed during 1914, together with the total number employed on the 15th of each month, or the nearest representative day, for the industry as a whole, and for each branch separately, by states.

For the belting and hose industry, June was the month of maximum employment and December, reporting 93.1 per cent of the maximum number, was the month of minimum employment. In the manufacture of rubber boots and shoes, the largest number was reported for December and the smallest for August, the variation being 17.9 per cent.

"Rubber goods, not elsewhere specified" reported the maximum number for May, and the minimum number, 76.5 per cent of the maximum, was shown for November. Among the states shown for this branch of the rubber industry, Illinois shows the greatest stability of employment, the minimum number forming 86.4 per cent of the maximum. Rhode Island shows the greatest fluctuation in employment, the smallest number forming only 43.8 per cent of the largest number. In this state November and April represented the extremes of employment.

Table 6

WAGE EARNERS: 1914.
[Month of maximum employment is indicated by boldface figures and that of minimum by *italic* figures.]

INDUSTRY AND STATE.	Average number employed during year.	Number employed on 15th day of the month or nearest representative day.												Per cent minimum is of maximum.
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
RUBBER GOODS—ALL BRANCHES.....	74,022	70,590	74,157	77,759	80,967	82,193	78,650	74,148	<i>68,414</i>	70,412	70,441	69,954	70,579	82.2
BELTING AND HOSE, RUBBER.														
United States.....	5,115	5,108	5,044	5,068	5,137	5,171	5,274	5,243	5,041	5,166	5,183	5,040	<i>4,910</i>	93.1
New Jersey.....	2,239	2,204	2,241	2,299	2,283	2,343	2,361	2,310	2,199	2,197	2,195	<i>2,114</i>	2,152	96.6
BOOTS AND SHOES, RUBBER.														
United States.....	18,687	18,286	18,325	18,613	18,513	18,776	18,752	17,491	<i>16,766</i>	18,617	19,377	20,340	20,398	82.1
Massachusetts.....	8,087	7,796	7,760	7,963	8,110	8,209	8,259	7,677	8,026	7,845	8,117	8,228	8,554	85.8
RUBBER GOODS, NOT ELSEWHERE SPECIFIED.														
United States.....	50,220	47,201	50,788	54,078	57,317	58,246	54,624	51,414	46,617	46,629	45,881	<i>44,574</i>	45,271	76.5
California.....	226	<i>187</i>	199	216	217	232	231	242	240	222	245	240	241	76.3
Connecticut.....	2,485	2,430	2,595	2,880	3,190	3,193	3,009	2,778	2,170	1,917	1,882	<i>1,785</i>	1,991	55.9
Illinois.....	563	586	569	597	589	601	598	577	<i>519</i>	521	525	529	545	86.4
Indiana.....	1,499	1,407	1,541	1,632	1,766	1,836	1,763	1,678	1,406	1,297	<i>1,174</i>	1,190	1,268	63.9
Massachusetts.....	4,743	5,057	5,181	5,232	5,189	5,164	5,170	4,462	<i>4,139</i>	4,339	4,372	4,302	4,250	78.4
Missouri.....	235	262	281	266	272	245	200	<i>194</i>	215	212	211	219	243	69.0
New Jersey.....	6,316	<i>5,869</i>	6,188	6,391	6,556	6,846	6,906	6,621	6,174	6,121	6,123	6,018	5,964	85.0
New York.....	3,633	3,741	3,649	3,918	3,956	3,973	3,918	3,734	3,288	3,578	3,560	3,067	<i>2,884</i>	75.1
Ohio.....	21,705	<i>19,479</i>	21,577	23,524	25,409	25,439	22,558	21,657	20,025	20,410	20,246	20,118	20,018	76.6
Pennsylvania.....	3,172	2,972	3,179	3,344	3,592	3,698	3,621	3,233	3,109	2,671	<i>2,668</i>	2,744	2,721	72.1
Rhode Island.....	1,541	1,753	1,765	1,879	2,011	1,986	1,875	1,827	1,341	1,035	1,107	<i>881</i>	1,032	43.8
Wisconsin.....	1,637	<i>1,366</i>	1,582	1,717	1,768	1,920	1,855	1,774	1,580	1,587	1,587	1,464	1,454	70.6

Prevailing hours of labor.—In Table 7 the average number of wage earners reported, for 1914 and 1909, for the rubber industry, has been classified according to the number of hours of labor per week prevailing in the establishments in which they were employed.

A similar classification is given for each branch separately, by states. The number employed in each establishment was classified as a total, even though a few employees worked a greater or smaller number of hours.

Table 7

Table 7		AVERAGE NUMBER OF WAGE EARNERS.						
INDUSTRY AND STATE.	Cen- sus year.	Total.	In establishments where the prevailing hours of labor per week were—					
			48 and under	Be- tween 48 and 54.	54.	Be- tween 54 and 60.	60.	Over 60.
RUBBER GOODS— ALL BRANCHES.	1914 1909	74,022 49,264	3,216 163	9,959 1,201	28,999 15,555	31,739 23,457	4,750 8,881	389 7
BELTING AND HOSE, RUBBER.								
United States.....	1914 1909	5,115 4,131	.....	.....	1,091	2,822 4,439	1,202 692	.....
New Jersey.....	1914 1909	2,239 1,913	.....	.....	.....	1,497 1,333	742 580	.....
BOOTS AND SHOES, RUBBER.								
United States.....	1914 1909	18,687 17,612	.....	338	14,869 10,142	3,490 4,537	 2,933	.....
Massachusetts.....	1914 1909	8,087 6,928	.....	.....	8,087 6,928	.....	.....	.....
RUBBER GOODS, NOT ELSEWHERE SPECIFIED.								
United States.....	1914 1909	50,220 26,521	3,216 163	9,621 1,201	8,019 5,413	25,427 14,481	3,548 5,256	389 7
California.....	1914 1909	226 74	55 34	137	34	.....	.....	.....
Connecticut.....	1914 1909	2,485 2,115	.....	366 131	184	1,568 1,767	367 217	.....

		AVERAGE NUMBER OF WAGE EARNERS.						
INDUSTRY AND STATE.	Cen- sus year.	Total.	In establishments where the prevailing hours of labor per week were—					
			48 and under	Be- tween 48 and 54.	54.	Be- tween 54 and 60.	60.	Over 60.
RUBBER GOODS, NOT ELSEWHERE SPECIFIED— continued.								
Illinois.....	1914 1909	563 104	2 12	38 4	7 25	488 61	28 2	.....
Indiana.....	1914 1909	1,499 787	.....	597	39	448 328	415 459	.....
Massachusetts.....	1914 1909	4,743 3,418	.....	246 5	143 6	4,348 1,157	6 2,220	30
Missouri.....	1914 1909	235	49	19	20	147	.....	.....
New Jersey.....	1914 1909	6,316 4,255	10	1,139 15	41 10	3,666 2,571	1,460 1,659	.....
New York.....	1914 1909	3,633 2,066	27 101	797 82	1,808 88	305 939	686 856	10
Ohio.....	1914 1909	21,705 10,382	3,067	5,848 843	99 4,080	12,297 5,158	64 301	340
Pennsylvania.....	1914 1909	3,172 1,205	12 5	417 39	2,704 5	39 784	 372	.....
Rhode Island.....	1914 1909	1,541 774	.....	.....	744 3	756 647	41 90	.....
Wisconsin.....	1914 1909	1,637 212	.....	17 38	.....	1,245	375 169	 5

The tendency toward a shorter working-day is emphasized by this table. In 1914, 50.2 per cent of the wage earners were employed in establishments in which the prevailing hours per week were 54 or fewer, while in 1909 only 34.3 per cent of the wage earners were employed in establishments of this class. On the other hand, these establishments which operated 60 hours or more per week employed 6.9 per cent of the wage earners in 1914, as compared with 18 per cent in 1909.

In 1914 more than half of the wage earners employed in the belting-and-hose and other-rubber-goods branches of the industry were reported for establishments operating between 54 and 60 hours per week, while in the boot-and-shoe branch nearly four-fifths were reported for those operating 54 hours per week.

For "rubber goods, not elsewhere specified," 58.5 per cent of the wage earners were reported by establishments operating more than 54 hours per week, as compared with 74.4 per cent in 1909.

Character of ownership.—Table 8 presents statistics concerning the character of ownership, or legal organization, of establishments in the rubber industry for 1914 and 1909.

CHARACTER OF OWNERSHIP.	Census year.	Number of establishments.	Average number of wage-earners.	Value of products.	Value added by manufacture.
All classes.....	1914 1909	342 267	74.022 49.264	\$300,993,796 197,394,638	\$137,959,083 74,649,536
Individuals.....	1914 1909	40 44	774 685	2,350,052 2,365,077	891,744 844,030
Corporations.....	1914 1909	283 196	73.040 48.349	297,939,143 194,062,094	136,729,985 73,386,455
All others.....	1914 1909	19 27	208 230	704,601 937,467	337,354 419,051
Per cent distribution:					
Individuals.....	1914 1909	11.7 16.5	1.0 1.4	0.8 1.2	0.6 1.1
Corporations.....	1914 1909	82.7 73.4	98.7 98.1	99.0 98.3	99.1 98.3
All others.....	1914 1909	5.6 10.1	0.3 0.5	0.2 0.5	0.2 0.6

Ninety-nine per cent of the total value of the product of the rubber industry in 1914 was reported for establishments operated by incorporated companies, as compared with 98.3 per cent in 1909. The value of products for this form of organization increased \$103,847,049, or 53.5 per cent, from 1909 to 1914, while the number of establishments and value of products for the other forms of ownership show a decrease.

Size of establishments.—The tendency of the industry to become concentrated in large establishments is indicated by the statistics given in Table 9.

VALUE OF PRODUCT.	Census year.	Number of establishments.	Average number of wage-earners.	Value of products.	Value added by manufacture.
All classes.....	1914 1909	342 267	74.022 49.264	\$300,993,796 197,394,638	\$137,959,083 74,649,536
Less than \$5,000.....	1914 1909	26 20	32 24	64,221 53,582	35,941 24,688
\$5,000 to \$20,000.....	1914 1909	52 45	259 204	528,766 500,503	286,135 239,568
\$20,000 to \$100,000.....	1914 1909	84 65	1,485 987	4,212,430 3,340,262	1,938,851 1,421,341
\$100,000 to \$1,000,000.....	1914 1909	117 88	13,965 9,672	45,599,371 34,000,274	19,250,061 12,509,325
\$1,000,000 and over.....	1914 1909	63 49	58,281 38,377	250,619,008 159,500,017	116,448,095 60,454,614
Per cent distribution:					
Less than \$5,000.....	1914 1909	7.6 7.5	(1) (1)	(1) (1)	(1) (1)
\$5,000 to \$20,000.....	1914 1909	15.2 16.9	0.3 0.4	0.2 0.3	0.2 0.3
\$20,000 to \$100,000.....	1914 1909	24.6 24.3	2.0 2.0	1.4 1.7	1.4 1.9
\$100,000 to \$1,000,000.....	1914 1909	34.2 33.0	18.9 19.6	15.1 17.2	14.0 16.8
\$1,000,000 and over.....	1914 1909	18.4 18.4	78.7 77.9	83.3 80.8	84.4 81.0

¹ Less than one-tenth of 1 per cent.

The most important group at each census, as measured by value of products, was that comprising establishments with products of over \$1,000,000, although the group having products valued at "\$100,000 to \$1,000,000" shows the largest number of establishments. The former group reported 83.3 per cent of the total value of products in 1914 and 80.8 per cent in 1909. Each of the other groups reported increases in the total value of products but their relative importance decreased.

The average value of products per establishment for the industry increased from \$739,306 in 1909 to \$880,099 in 1914, and the average number of wage earners per establishment from 185 in 1909 to 216 in 1914.

Table 10 shows the size of establishments in 1914 and 1909, as measured by the number of wage earners employed, for the industry as a whole and for each branch separately, by states.

Of the 342 establishments reported for the rubber industry in 1914, 10 employed no wage earners. These were small establishments in which the work was done by the proprietors and firm members. Some of these employed a few wage earners for a short time; but the number was so small and the period of employment so short that in estimating the average number, as described in the "Explanation of terms," no wage earners could be shown.

In 1914 a majority of the establishments, 69 per cent, employed not more than 100 wage earners, and

THE RUBBER INDUSTRY.

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only 7.4 per cent of the wage earners were reported by these establishments.

The establishments employing more than 500 wage earners, although forming only 11.7 per cent of the total number of establishments, gave employment to 70.2 per cent of the wage earners. In 1909 similar percentages for this group were 10.1 and 65.3 per cent, respectively.

There were 13 establishments that reported over 1,000 wage earners each. One of these is included in the belting-and-hose branch of the industry; 5 in the boot-and-shoe branch; and 7 in the other rubber-goods branch. Four of these large plants are located in Massachusetts, 4 in Ohio, and 1 each in Connecticut, Indiana, Michigan, Rhode Island, and Wisconsin.

Table 10

INDUSTRY AND STATE.	Census year.	ESTABLISHMENTS EMPLOYING—																			
		TOTAL.		No wage earners.		1 to 5 wage earners.		6 to 20 wage earners.		21 to 50 wage earners.		51 to 100 wage earners.		101 to 250 wage earners.		251 to 500 wage earners.		501 to 1,000 wage earners.		Over 1,000 wage earners.	
		Establishments.	Wage earners (average number).	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.
RUBBER GOODS—ALL BRANCHES.	1914 1909	342 267	74,022 49,264	10 5	58 62	167 182	75 53	868 607	60 41	1,978 1,247	33 19	2,501 1,325	37 39	5,944 6,138	29 21	10,602 7,618	27 15	18,881 10,784	13 12	33,081 21,363	
BELTING AND HOSE, RUBBER.																					
United States.....	1914 1909	18 18	5,115 5,131		 1	 2	 1	 15	 12	 2	 75	 3	 193	 6	 1,117	 2	 724	 3	 1,948	 1	 1,043
New Jersey.....	1914 1909	9 9	2,239 1,913				 1	 15	 12	 1	 28	 2	 140	 3	 290	 1	 339	 2	 1,427		
BOOTS AND SHOES, RUBBER.																					
United States.....	1914 1909	23 22	18,687 17,612	..... .....	..... .....	..... .....	..... 2	 13	 1	 33	..... .....	..... .....	..... 2	 355	 7	 2,935	 6	 4,824	 5	 10,527	
Massachusetts.....	1914 1909	9 8	8,087 6,928	..... .....	..... .....	..... .....	..... 2	 13	 7	..... .....	..... .....	..... .....	..... 1	 137	 2	 1,887	 2	 1,714	 2	 4,978	
RUBBER GOODS, NOT ELSEWHERE SPECIFIED.																					
United States.....	1914 1909	301 227	50,220 26,521	10 5	58 61	167 180	72 51	840 588	57 41	1,870 1,247	30 16	2,308 1,129	29 30	4,472 4,723	20 11	6,943 3,715	18 8	12,109 5,856	7 4	21,511 9,083	
California.....	1914 1909	11 5	226 74	..... .....	..... 2	 4	 1	 18	 2	 101	 1	 90	..... .....	..... .....	..... .....	..... .....	..... .....	..... .....	..... .....	..... .....	
Connecticut.....	1914 1909	18 13	2,485 2,115	..... .....	..... 2	 10	 6	 69	 3	 99	 2	 137	 1	 146	 2	 649	 2	 1,375	 1	 1,015	
Illinois.....	1914 1909	17 13	563 104	..... .....	..... 6	 15	 6	 62	 1	 66	 1	 90	..... .....	..... .....	..... 1	 328	..... .....	..... .....	..... .....	..... .....	
Indiana.....	1914 1909	9 11	1,469 787	..... .....	..... 4	 8	 1	 13	 2	 123	 1	 66	 1	 150	 2	 563	 1	 597	..... .....	..... .....	
Massachusetts.....	1914 1909	42 29	4,743 3,418	..... .....	..... 6	 20	 5	 54	 6	 241	 5	 360	 3	 455	 4	 1,490	 1	 960	 1	 2,046	
Missouri.....	1914 1909	6	235 .....	..... .....	..... .....	..... .....	..... 4	 66	 1	 22	..... .....	..... .....	..... 1	 147	..... .....	..... .....	..... .....	..... .....	..... .....	..... .....	
New Jersey.....	1914 1909	53 36	6,316 4,255	..... .....	..... 2	 4	 19	 7	 90	 13	 4	 447	 9	 677	 7	 1,114	 5	 1,863	 3	 2,050	
New York.....	1914 1909	45 53	3,633 2,066		 5	 14	 36	 9	 96	 7	 222	 2	 194	 3	 556	 2	 641	 3	 1,888		
Ohio.....	1914 1909	54 37	21,705 10,382	..... .....	..... 10	 30	 7	 84	 8	 230	 6	 453	 9	 1,376	 1	 340	 4	 2,774	 4	 16,354	
Pennsylvania.....	1914 1909	19 13	3,172 1,205	..... .....	..... 3	 14	 2	 31	 4	 131	 1	 84	 1	 128	 2	 694	 3	 2,120	..... .....	..... .....	
Rhode Island.....	1914 1909	6 5	1,541 774	..... .....	..... 1	 3	..... .....	..... .....	..... 2	 71	 2	 165	..... .....	..... .....	..... .....	..... .....	..... 2	 1,305	..... .....	..... .....	
Wisconsin.....	1914 1909	5 3	1,637 212	..... .....	..... 1	 5	..... .....	..... 2	 34	 1	 38	..... .....	..... .....	..... 1	 174	 1	 375	..... .....	..... 1	 1,064	

Engines and power.—Table 11 shows, for 1914, 1909, and 1904, for the rubber industry, the number and horsepower of engines and motors employed in generating power (including electric motors operated

by purchased current). It also shows separately the number and horsepower and per cent distribution of electric motors operated by current generated in the establishments reporting.

MANUFACTURES.

Table 11

POWER.	NUMBER OF ENGINES OR MOTORS.			HORSEPOWER.					
				Amount.			Per cent distribution.		
	1914	1909	1904	1914	1909	1904	1914	1909	1904
Primary power, total.....	2,237	1,013	508	199,543	122,436	86,806	100.0	100.0	100.0
Owned.....	627	589	393	165,259	113,812	84,202	82.8	93.0	97.0
Steam engines and turbines ¹	556	529	441	158,547	106,643	79,661	79.5	87.1	91.8
Internal-combustion engines.....	30	23	13	1,691	2,361	307	0.8	1.9	0.4
Water wheels, turbines, and motors.....	41	37	49	5,021	4,808	4,234	2.5	3.9	4.9
Rented.....	1,610	424	(*)	34,284	8,624	2,606	17.2	7.0	3.0
Electric.....	1,610	424	(*)	33,983	7,909	1,738	17.0	6.5	2.0
Other.....				301	715	868	0.2	0.6	1.0
Electric.....	6,176	1,502		114,803	27,591	10,452	100.0	100.0	100.0
Rented.....	1,610	424	(*)	33,983	7,909	1,738	29.6	28.7	16.6
Generated by establishments reporting.....	4,566	1,078	373	80,820	19,682	8,714	70.4	71.3	83.4

¹ Figures for horsepower include for 1909 the amounts reported under the head of "other" owned power.

* Not reported.

The total number of engines and motors used in generating primary horsepower more than doubled during the 5-year period 1909-1914, and the total amount of primary horsepower generated shows an increase of 63 per cent for 1914 as compared with 1909. Although the steam power increased 51,904 horsepower, or 48.7 per cent, during the later 5-year period and forms 79.5 per cent of the primary power reported, in 1914, the largest relative increase is shown for rented electric power. In 1909 rented electric power formed

6.5 per cent of the total primary power reported and in 1914, 17 per cent, and the actual increase amounted to 26,074 horsepower, or 329.7 per cent.

Fuel.—The principal fuel used in the industry in 1914 was bituminous coal, of which 1,064,761 short tons were consumed. In addition, 131,038 tons (2,240 pounds) of anthracite coal, 376,324 thousand cubic feet of gas, 18,843 barrels of oil, and 3,131 tons (2,000 pounds) of coke were reported.

SPECIAL STATISTICS RELATING TO PRODUCTS.

Products.—Table 12 gives in detail, for 1914, the quantities and values of the principal products of the rubber industry for the United States. Data for earlier censuses are not available.

PRODUCT.	Number and amount.	PRODUCT.	Number and amount.
Total value.....	\$300,993,796	Belting, value.....	\$7,980,405
Boots, rubber:		Hose, value.....	\$16,853,693
Pairs.....	4,024,486	Packing, value.....	\$3,507,651
Value.....	\$12,647,934	Clothing, value.....	\$6,790,515
Shoes, rubber:		Druggists' and stationers' sundries, value.....	\$7,511,755
Pairs.....	57,211,728	All other manufactures of rubber, value.....	\$40,133,230
Value.....	\$37,868,222	Scrap and old rubber, sold and on hand, value.....	\$1,260,836
Tires:		Reclaimed rubber, sold and on hand, value.....	\$11,134,958
Automobile, pneumatic—		All other products, value..	\$5,885,008
Casings—			
Number.....	8,021,371		
Value.....	\$106,678,961		
Inner tubes—			
Number.....	7,907,351		
Value.....	\$20,101,084		
Motorcycle and bicycle (including aeroplane tires)—			
Number.....	3,728,138		
Value.....	\$6,905,853		
Solid, all kinds, value.	\$13,735,681		

¹ In addition, products to the value of \$753,503 were reported by establishments assigned to other classifications.

The 7 establishments classified as "belting" reported rubber hose to the value of \$3,330,173, and other rubber goods to the value of \$3,405,960, while the 11 establishments manufacturing hose as their product of chief value reported belting to the value of \$1,300,393, and other rubber products to the value of \$2,729,118, and those establishments making other rubber goods reported belting to the value of \$3,081,464, and hose to the value of \$6,712,267.

The establishments in the industry were classified according to the product of chief value, but in the manufacture of the various products there was much overlapping between the branches of the industry. For example, there were 18 establishments that reported the manufacture of belting and hose as a chief product, but 18 additional establishments reported some belting or hose.

In 1914 there were 36 establishments that manufactured rubber belting and hose, 17 of which were in New Jersey, 5 in Ohio, 4 in Massachusetts, 3 each in California and New York, and 1 each in Connecticut, Delaware, Illinois, and Pennsylvania; 24 establishments made rubber boots and shoes, 9 of which were in Massachusetts, 5 in Connecticut, 4 in Rhode Island, 2 in New Jersey, and 1 each in Indiana, New York, Ohio, and Wisconsin; and 95 establishments made rubber tires, including inner tubes, 27 of which were in Ohio, 19 in New Jersey, 9 in Pennsylvania, 7 in Massachusetts, 6 each in Connecticut and Indiana, 5 in New York, 4 in Wisconsin, 3 in California, 2 each in Illinois, Michigan, and Rhode Island, and 1 each in Kentucky, Maryland, and Washington.

The total value of products for the industry as a whole was \$300,993,796 in 1914, of which \$109,658,605, or more than one-third, was reported by the state of Ohio. Massachusetts, New Jersey, and Connecticut, in the order named, were the next states in importance.

Rubber boots represented 4.2 per cent of the total value of products, and rubber shoes 12.6 per cent. Massachusetts was the leading state in the output of both rubber boots and rubber shoes, producing 1,850,098 pairs of rubber boots, valued at \$7,027,168, and 22,760,889 pairs of rubber shoes, valued at \$13,486,639. Connecticut and Indiana were the next states in importance in the manufacture of rubber boots, and Connecticut, Rhode Island, and Indiana in the output of rubber shoes.

Tires are the chief product of the rubber industry, the output of these in 1914 being valued at \$146,421,569, or 48.6 per cent of the total value of products for the entire industry. Ohio was the leading state in the manufacture of pneumatic automobile tires, reporting 4,747,666 casings, valued at \$61,723,117, or 58.4 per cent of the total value for the United States, and 4,102,959 inner tubes, valued at \$10,052,961, or 50 per cent of the total value. Massachusetts, New Jersey, Michigan, Wisconsin, and Pennsylvania, in the order named, followed Ohio in importance in the production of casings, while New Jersey, Massachusetts, Indiana, and Pennsylvania were the states next in importance in the output of inner tubes. New Jersey reported 806,856 casings, valued at \$9,600,776, and 1,618,098 inner tubes, valued at \$4,403,444, Indiana reported 628,799 inner tubes, valued at \$1,088,473, and Pennsylvania, 348,592, valued at \$1,031,314. The production of solid tires for automobiles and other vehicles is also highly centralized in Ohio, which reported \$11,897,710, or 86.6 per cent of the total value of this product, in 1914. Pennsylvania was the principal state in the manufacture of motorcycle and bicycle tires, while Ohio and Indiana were the states next in importance. Ohio produced 643,419 of such tires, valued at \$1,570,244, and Indiana, 770,447 tires, valued at \$1,293,202.

New Jersey, with a product valued at \$3,207,681, was the leading state in the manufacture of rubber belting, Ohio being second, with \$2,154,696, and Massachusetts third, with \$1,550,705. The same states in the order named led in the value of rubber hose produced, the totals being \$6,066,500, \$4,194,576, and \$2,722,939, respectively. New Jersey reported rubber packing, to the value of \$1,823,568, this amount being more than one-half of the total for the United States. Ohio, with \$851,807, was next in importance in this branch of the rubber industry. In the manufacture of rubber clothing, Massachusetts was the leading state, reporting a product valued at \$3,394,807,

or nearly one-half the total value for the United States.

Ohio was the leading state in the output of druggists' and stationers' sundries made of rubber, reporting \$2,513,949, or slightly more than one-third of the total value of this class of products. Massachusetts was next in importance, with \$1,155,323, and Rhode Island, New York, and Connecticut followed in the order named.

The \$40,133,250 reported for "all other manufactures of rubber," consisted largely of rubberized fabrics, including carriage and automobile cloth, hard rubber,

mechanical rubber, rubber soles and heels, mats and matting, rubber thread, and jar rings, for each of which products valued at over \$1,000,000 were reported.

Imports and exports.—Table 13 gives the value of the imports and exports of the manufactures of rubber for the fiscal years (ending June 30) from 1909 to 1915, inclusive. The figures are taken from the Statistical Abstract of the United States, issued by the Bureau of Foreign and Domestic Commerce, Department of Commerce.

Table 13 KIND.	VALUE OF THE IMPORTS AND EXPORTS OF THE MANUFACTURES OF RUBBER FOR THE YEARS ENDING JUNE 30—						
	1915	1914	1913	1912	1911	1910	1909
Imports, total.....	\$802,122	\$1,559,812	\$1,294,536	\$915,834	\$936,406	\$1,224,914	\$1,463,589
Exports, total.....	14,767,513	12,441,220	14,324,894	12,822,918	12,452,562	10,175,624	7,432,632
Belting, hose, and packing.....	1,807,848	2,372,887	2,605,551	2,315,424	2,163,416	1,980,825	1,496,445
Boots and shoes.....	2,780,325	1,113,495	1,438,283	1,502,890	2,219,430	1,984,739	1,262,673
Tires—							
Automobile.....	4,963,270	3,505,267	3,943,220	2,657,809	2,065,107		
All other.....	576,602	568,372	611,458	546,833	562,470		
Scrap and old rubber.....	291,421	598,287	880,442	780,188	723,664	578,944	402,897
Reclaimed rubber.....	822,561	834,440	932,904	875,501	781,650	535,795	414,861
All other manufactures of rubber.....	3,525,486	3,453,472	3,913,036	4,144,273	3,886,825	5,115,331	3,823,956

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DETAIL STATE TABLES.

Table 14 shows, for 1914, 1909, and 1904, the number of establishments, average number of wage earners, primary horsepower, wages, cost of materials, and value of products for the rubber industry and, by

states, for the three branches of the industry. Table 15 presents, for 1914, the more detailed statistics of the rubber industry and, by states, for the three branches of the industry.

TABLE 14.—COMPARATIVE SUMMARY, BY STATES, FOR 1914, 1909, AND 1904.

INDUSTRY AND STATE.	Cen- sus year.	Num- ber of estab- lish- ments.	Wage earners (aver- age num- ber).	Pri- mary horse- power.	Wages.	Cost of materi- als.	Value of prod- ucts.	INDUSTRY AND STATE.	Cen- sus year.	Num- ber of estab- lish- ments.	Wage earners (aver- age num- ber).	Pri- mary horse- power.	Wages.	Cost of materi- als.	Value of prod- ucts.
					Expressed in thousands.								Expressed in thousands.		
RUBBER GOODS—ALL BRANCHES.	1914 1909 1904	342 267 265	74,022 49,264 43,873	199,543 122,436 86,808	\$44,167 25,137 20,084	\$163,035 122,745 80,002	\$300,994 197,395 148,015	RUBBER GOODS, NOT ELSE- WHERE SPECIFIED—CON.							
BELTING AND HOSE, RUB- BER.								Connecticut.....	1914 1909 1904	18 13 21	2,485 2,115 3,143	9,698 6,138 5,797	\$1,413 1,116 1,283	\$5,645 7,126 5,342	\$10,188 11,005 8,868
United States.....	1914 1909 1904	18 18 19	5,115 5,131 3,698	22,995 17,471 12,343	2,902 2,473 1,805	12,967 10,976 9,090	23,561 19,238 14,954	Illinois.....	1914 1909 1904	17 13 11	563 104 1,179	1,951 293 1,473	342 53 469	965 200 1,671	1,980 381 2,848
New Jersey.....	1914 1909 1904	9 9 12	2,239 1,913 2,192	10,260 8,133 7,603	1,260 985 1,112	5,218 5,024 6,141	10,341 8,302 9,916	Indiana.....	1914 1909 1904	9 11 6	1,499 787 568	5,984 5,276 2,325	839 410 255	4,265 2,908 1,367	6,323 4,313 2,357
All other states.....	1914 1909 1904	9 9 7	2,876 3,218 1,506	12,785 9,338 4,740	1,642 1,488 603	7,749 5,952 2,949	13,220 10,936 5,038	Massachusetts.....	1914 1909 1904	42 29 47	4,743 3,418 5,003	17,515 10,123 10,441	2,845 1,799 2,208	14,142 11,005 8,829	23,011 15,796 14,068
BOOTS AND SHOES, RUB- BER.								New Jersey.....	1914 1909 1904	53 36 24	6,316 4,255 1,728	22,214 12,906 5,609	3,681 2,300 846	15,172 13,032 2,959	25,468 19,543 4,836
United States.....	1914 1909 1904	23 22 22	18,667 17,612 18,991	24,621 25,903 26,084	9,985 8,544 8,867	23,956 29,577 32,000	53,822 49,721 70,065	New York.....	1914 1909 1904	45 53 55	3,633 2,066 2,692	11,915 6,398 4,399	1,887 1,058 1,113	4,686 5,659 5,000	10,228 8,784 8,266
Massachusetts.....	1914 1909 1904	9 8 7	8,067 6,928 7,674	8,177 8,330 8,967	4,468 3,376 3,754	10,455 10,640 13,178	23,789 18,722 39,035	Ohio.....	1914 1909 1904	54 37 27	21,705 10,382 4,815	58,672 25,685 13,945	14,578 5,660 2,318	58,737 32,442 15,964	109,669 53,911 15,964
All other states.....	1914 1909 1904	14 14 15	10,600 10,684 11,317	18,444 17,573 17,097	5,518 5,168 5,113	13,501 18,937 18,822	30,033 30,999 31,030	Pennsylvania.....	1914 1909 1904	19 13 13	3,172 1,205 751	8,970 5,300 2,365	1,744 566 366	7,299 3,242 1,813	12,177 4,666 2,220
RUBBER GOODS, NOT ELSE- WHERE SPECIFIED.								Rhode Island.....	1914 1909 1904	6 5 9	1,541 774 991	3,350 1,075 1,215	821 320 417	4,092 2,075 1,639	6,099 3,143 2,582
United States.....	1914 1909 1904	301 227 224	50,220 26,521 21,184	151,927 79,062 48,381	31,279 14,120 9,412	126,112 82,192 38,912	223,611 128,436 62,966	All other states.....	1914 1909 1904	27 12 7	4,337 1,341 279	10,578 4,959 768	2,957 807 117	10,660 4,334 435	17,583 6,551 738
California.....	1914 1909 1904	11 5 4	226 74 45	1,180 209 44	172 61 30	479 169 131	905 323 219								

¹ Figures include data for establishments engaged in the manufacture of elastic woven goods, and are not strictly comparable with those for 1909 and 1914.

MANUFACTURES.

TABLE 15.—DETAIL STATISTICS FOR THE

INDUSTRY AND STATE.		Number of establishments.	PERSONS ENGAGED IN THE INDUSTRY.								WAGE EARNERS DEC. 15, OR NEAREST REPRESENTATIVE DAY.					Capital.
			Total.	Proprietors and firm members.	Salaried officers, superintendents, and managers.	Clerks, etc.		Wage earners.			Total.	16 and over.		Under 16.		
						Male.	Female.	Average number.	Number, 15th day of—			Male.	Female.	Male.	Female.	
									Maximum month.	Minimum month.						
1	RUBBER GOODS—ALL BRANCHES.	342	88,821	87	1,512	9,900	3,300	74,022	My 82,193	Au 68,414	74,788	59,096	15,030	345	317	\$267,671,422
	BELTING AND HOSE, RUBBER.															
2	United States.....	18	6,205		116	756	218	5,115	Je 5,274	De 4,910	5,072	4,364	692	11	5	22,436,922
3	New Jersey.....	9	2,662		54	292	77	2,239	Je 2,361	No 2,114	2,217	1,876	336	5		8,753,432
4	All other states ¹	9	3,543		62	464	141	2,876			2,855	2,488	356	6	5	13,683,490
	BOOTS AND SHOES, RUBBER.															
5	United States.....	23	20,359	2	158	1,056	456	18,687	De 20,398	Au 16,756	20,437	12,133	8,034	112	158	46,051,464
6	Massachusetts.....	9	8,926		73	513	253	8,087	No 8,828	Jy 7,577	8,596	5,244	3,258	63	31	23,027,061
7	All other states ¹	14	11,433	2	85	543	203	10,600			11,841	6,889	4,776	49	127	23,024,403
	RUBBER GOODS, NOT ELSEWHERE SPECIFIED.															
8	United States.....	301	62,257	85	1,238	8,088	2,626	50,220	My 58,246	No 44,574	49,279	42,599	6,304	222	164	199,183,036
9	California.....	11	292	6	19	30	11	226	Oct 245	Ja 187	243	198	45			1,215,068
10	Connecticut.....	18	2,846	2	97	168	94	2,485	My 3,193	No 1,785	2,502	2,125	353	11	13	7,813,178
11	Illinois.....	17	683	4	26	68	22	563	My 601	Au 516	550	474	73	2	1	1,675,391
12	Indiana.....	9	1,649	1	32	76	41	1,499	My 1,836	Oc 1,174	1,414	1,308	105	1		6,696,493
13	Massachusetts.....	42	5,417	3	128	410	133	4,743	Mh 5,282	Au 4,139	4,750	3,952	701	37	60	17,345,185
14	Missouri.....	6	269	4	13	13	4	235	Fe 281	Jy 194	258	156	101	1		350,228
15	New Jersey.....	53	7,773	9	219	895	334	6,316	Je 6,906	Ja 5,869	6,203	5,409	686	90	18	22,402,538
16	New York.....	45	4,161	24	90	311	103	3,633	My 3,973	De 2,984	3,107	2,178	896	10	23	9,700,399
17	Ohio.....	54	29,212	10	469	5,433	1,595	21,705	My 25,439	Ja 19,479	21,903	19,451	2,423	24	5	100,742,327
18	Pennsylvania.....	19	3,585	9	64	232	108	3,172	My 3,698	No 2,668	2,746	2,360	336	33	17	12,326,867
19	Rhode Island.....	6	1,718		22	110	45	1,541	Ap 2,011	No 881	1,559	1,178	360	7	14	5,284,168
20	Wisconsin.....	5	1,951	4	25	202	83	1,637	My 1,920	Ja 1,356	1,462	1,316	142	1	3	4,961,211
21	All other states ¹	16	2,701	9	34	140	53	2,465			2,582	2,494	83	6		8,669,968

¹ Owned power only.² Includes rented power, other than electric.³ All other states embrace: California, 2 establishments; Connecticut, 1; Delaware, 1; Massachusetts, 3; New York, 2.

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